



## The Description of the Horological Ring-Dyall, which sheweth the Hour of the Day in any part of the World.



It is projected out of two great Circles of the *Sphere*, An *Axis*, and a little *Ring* to hang it by. The greater Circle is the *Meridian*; one quadrant or quarter of it is divided into 90. degrees, to set it to the *Latitude* of the place wherein you are: On the other side of this *Meridian*, is a quadrant of *Altitude*, to take the height of the *Sun*, whereby you may find the *Latitude*.

The lesser Circle, is the *Aequinoctial*, divided into 24. equal parts or *hours*, with their halves and quarters; which are numbred but from *III.* in the morning, to *IX.* at night: the rest of the hours are left out, being seldom or never used.

The *Diameter*, or broad *Plate*, hath a slit in the middle; and upon one side are the Months and Dayes of the year graduated to every fifth Day. On the other side is the *Declination* of the *Sun*, from the *Aequinoctial* to every fifth Day, which is to be used with the Quadrant of *Altitude*, to find the *Latitude* of the place. The little *Ring* is made to slide along the Quadrant, with a small *tooth* to set it to the *Latitude*; which if you know not, you may find it in this manner.

### 1. EXAMPLE.

Suppose the *Latitude* were unknown to you, and you would find it out your self, admit on the 11th of *June*, you must by the former Rule find the *Declination* of the *Sun* for that day, which will be 23. degrees and a half, or 30. minutes *Northwards*; then take the height of the *Sun* at 12. a clock, which near about *London*, will be 62. degrees; subtract the *Declination* 23. degrees 30. minutes, out of 62. gr. and the remainder will be 38. degrees 30. minutes, the height of the *Aequinoctial*; take this 38. gr. 30. from 90. degrees, the remainder will be 51. deg. 30. min. the *Latitude* at *London*.

Now if you observe in the Winter half-year, viz. from the 13th of *September*, to the 10th of *March*, then you must add your two sums together; and the sum taken out of 90. gr. will be the *Latitude*, as before.

### 2. EXAMPLE.

Admit the 10th of *December*, the *Sun's Declination* will be 23. gr. 30. *Southward*, the *Meridian Altitude* 15. gr. add these two sums together, which make 38. gr. 30. min. the height of the *Aequinoctial*; which being subtracted from 90. gr. leaves 51. gr. 30. min. as before.

### How to find the Hour of the Day.

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You must set the *tooth* to the height of the *Pole* or *Latitude*, and the *Hole* in the *Plate* you must slide to the day of the Month; then draw out the *Aequinoctial*, or lesser Circle, and as near as you can, guess at the hour, and turn the *hole* to it; then hold the Instrument by the little *Ring*, and move it, till the *Sun* shine through the *Hole* upon the middle line in the *Aequinoctial*, that is the *Hour* of the Day: And the *Meridian*, as it hangeth, sheweth the true *South* and *North* parts of the *World*.

### How to find the Elevation of the Pole, or Latitude of the Place.

First set the *Hole* in the moving piece, to the day of the Month; then turn the other side, and against the hole you shall find the *Sun's Declination* for that day. The same day you must take the *Meridian Altitude* of the *Sun*, which will be at twelve a clock every day, and may be performed by this Instrument thus: Put a *Pin* into the *Hole*, which you shall find in the *Greatest Circle*; then move the *tooth* to the beginning of the degrees in the lesser Quadrant, and turn the *pin* next to the *Sun*: and that degree which is cut by the shadow of the *pin*, is the height of the *Sun*.

If the time of your observation be from the 10th of *March*, to the 13th of *September*, you must subtract the *Declination* out of the *Altitude*, and the remainder is the height of the *Aequinoctial*; which number being taken out of 90. degrees, sheweth the *Latitude* of the place.

Note that this *Dyal*, or any other Instrument for the Mathematicks, are made by *Walter Hayes*, at the Cross-daggers in *Moor-Fields*, next door to the Popes-head Tavern, *London*.